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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,321	02/16/2001	Takaya Sato	8292.013	1858

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,321

Applicant(s)

SATO ET AL.

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,34 and 54-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,34 and 54-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 12/22/2003. Claims 1, 4-6, and 34 have been amended. Claims 2, 3, 7-33, and 35-53 have been cancelled. Claims 54-56 have been added. Claims 1, 4-6, 34, and 54-56 are pending. Claims 1, 4-6, 34, and 54-56 are finally rejected for reasons necessitated by applicant's amendment.

Claim Objections

2. Claim 5 is objected to because of the following informalities: Claim 5 has been amended and it is not an original claim as identified. Appropriate correction is required.
3. Claim 4 is objected to because of the following informalities: In claim 4, the preamble "multi-electrode structure" should be "multi-layer electrode structure" in order to be consistent with claim 1 from which it depends. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 34 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

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art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 34, the limitation “wherein at least one layer of electrode material is coated with an ion-conducting polymer” does not appear to be in the original disclosure. Instead, the specification states that the electrode material, not a layer of electrode material, is coated with an ion-conducting polymer (see original claim 13 for example).

In claim 54, the limitation “wherein the amount of binder used in said first electrode layer is greater than the amount of binder used in said second electrode layer” does not appear to be in the original disclosure. Instead, the specification discloses that the percentage by weight of binder in the electrode layer is greater than the percentage by weight of binder used in the second electrode layer as seen in Table 1 of the specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 4-6, 34, and 54-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the limitation “thereby attaining effective adhesive properties and low electrical resistance of said electrode” is indefinite because the term “said electrode” lacks antecedent basis within the claim. While the claim recites “electrode structure”, “electrode layers”, “electrode material”, “first electrode layer”, “second electrode layer”, it is unclear what the phrase “said electrode” refers to in the limitation.

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Claim 34 recites the limitation "at least one layer of electrode material" in line 2. There is insufficient antecedent basis for this limitation in the claim. This limitation in claim 34 is also indefinite because it is unclear how the at least one layer of electrode material relates to the rest of the structural elements recited in claim 1 from which it depends.

In claim 54, the limitation "wherein the amount of binder used in said first electrode layer is greater than the amount of binder used in said second electrode layer" is indefinite because it is unclear what the measurement of the amount is based on. Is the amount the absolute amount of binder used in the electrode layer or amount by weight, by volume, by mole, etc. of the electrode layer?

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 4, 34, 54, and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by the JPO machine translation for JP 11-67214 A.

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The JPO machine translation for JP 11-67214 A discloses a multi-layered positive electrode structure comprising a first layer 3 and a second layer 4 where the first layer is coated on the current collector 1 (See Figure 2). The active material used for the first electrode layer and that of the second electrode layer is different (see claim 8 of machine translation).

In a specific example, the first positive electrode layer comprised 5 weight section of polyvinylidene fluoride as a binder and 3 weight section artificial graphite (the powdered electrically-conducting substance) and 90 weight section of an active material and the thickness of the first electrode layer is 10 microns (see paragraph 15 of machine translation). The second positive electrode layer comprised 5 weight section of polyaniline as binder and 95 weight section of active material and the thickness of the second electrode layer was 80 microns (see paragraph 15 of machine translation).

A polymer electrolyte gel made of acryloyl conversion of polyethylene glycols and trimethylpropane triacrylate which is an ion-conducting polymer, is coated onto the front surface of the positive electrode (see paragraph 15 of machine translation).

Instead of a polymer electrolyte gel, the battery can be made using a nonaqueous electrolyte solution containing ethylene carbonate, dimethoxyethane, and LiPF₆ and polyethylene film as separator (see paragraph 22 of machine translation). The polyvinylidene fluoride binder in the first layer inherently becomes gelled when exposed to the nonaqueous electrolyte solution and the gelled polyvinylidene fluoride binder inherently is ion-conducting.

The use of polyvinylidene fluoride improves the adhesion of the first electrode layer to the current collector (see paragraph 7 of machine translation). Since polyvinylidene fluoride has a higher adhesive strength than polyaniline, the first electrode layer would have a stronger

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adhesive strength than the second electrode layer relative to the current collector resulting in an electrode structure having effective adhesive properties. Furthermore, the first electrode layer has low electrical resistance (see paragraph 9 of machine translation) and use of conductive polymer as binder in the second electrode layer would give low electrical resistance to the electrode structure when the cell is not overdischarged.

10. Claims 5, 6 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by the JPO machine translation for JP 11-67214 A and as evidenced by Heeger et al. (US 5,246,627).

The JPO Machine Translation for JP 11-67214 A discloses all the limitations of claims 5, 6 and 56 (see paragraph above) except explicitly disclosing that the polyaniline is a polymer that is prone to form fibrils.

Heeger et al. provide evidence that polyaniline is a polymer that is prone to form fibrils (see col. 3, lines 7-25, col. 4, lines 19-54, col. 6, lines 18-54).

Thus, the JPO Machine Translation for JP 11-67214 A anticipates the claims.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 4-6, and 34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/

Susy Tsang-Foster

Susy Tsang-Foster
Primary Examiner
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